

Pursuant to the Examiner's opening remarks, applicant hereby cancels all claims and attaches a new set of claims numbered 22-41 for examination, pursuant to 37 C.F.R. §1.121 as Appendix 1 hereto.

### R E M A R K S

Applicant respectfully requests further examination and reconsideration in view of the above amendment and the arguments set forth fully below.

The Examiner objected to the specification as introducing "new matter" by using the term "about 22%" about 40%" and "about 70%" on page 6, and made corresponding rejections under 35 USC 112. Applicant denies that use of the word "about" introduces new matter into the application, but rather indicates simply that there may be some slight variations in the weight percentages shown. This is consistent with the language originally used on page 6, which specified that the one range shown (the remaining ranges were claimed) was approximately. Nonetheless, applicant has amended the specification on page 6, reinstating the original language approximately 4 to 22% FFA<sup>1</sup>, and deleting the word "about" which appears before "40%" and "70%," which should fully resolve this objection/rejection. The

The Examiner also objects to the phrase "...and other components.." which appeared in amended Claim 1 as unsupported by the specification. Applicant respectfully disagrees. The specification specifically discloses "other components," namely free fatty acids and a wick (Fig. 1; p. 6). Moreover, one having ordinary skill in the art of candlemaking would also realize that other components can be added, if desired, such as fragrances (see, e.g., Calzada, Col. 1, lines 25-27). Nonetheless, applicant has changed the transitional phrase used in new claim 22 to "comprising" which is inherently open to additional elements not expressly disclaimed.

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<sup>1</sup> The term "approximately" was originally intended to modify the entire range shown; restoring the original language should be considered as restoring the originally intended scope of the range.

35 USC §103 Rejection - Tao

The Examiner rejected all claims under 35 USC 103 as unpatentable over Tao, stating:

Tao teaches a vegetable lipid-based composition and candle comprising fully hydrogenated triglycerides and free fatty acids (see col. 1, lines 60-67). The triglycerides and free fatty acids are obtained from plant sources (see col. 2, lines 51-55) and are preferably saturated (see col. 3, lines 1-2). The free fatty acid triglyceride mixture contains from 1-99% triglyceride and from 1 to 99% free fatty acid (see Example 5). Tao teaches the limitations of the claims other than the difference that is discussed below.

Tao differs from the claims in that he does not specifically teach the claimed iodine value. However, it would be reasonable to expect that the triglycerides and fatty acids of Tao would possess the claimed iodine value because Tao teaches that the triglycerides are fully hydrogenated and that he prefers triglycerides and free fatty acids that are saturated.

New independent claim 22 is directed to a candle comprising hydrogenated plant source triglycerides in combination with free fatty acids, the candle having an IV of less than 10 and being substantially free of petroleum waxes. New independent claims 32 and 39, likewise, claim a paraffin-free candle. These claims, and their dependent claims, are believed to fully distinguish Tao which is directed to a candle having a vegetable lipid composition and a petroleum wax.

New independent claims 22, 32 and 39 are further distinguishable over Tao because they are directed to a candle which produces substantially no soot when burned. This arises from the fact that applicant has found that controlling the IV of the candle composition produces a substantially soot-free candle.

It is also beyond dispute that Tao does not teach, suggest, or mention (a) using fatty materials having low Iodine Values (IV), or (b) how to create a candle which is substantially non-sooting. Tao does not teach that his triglycerides *must* be substantially fully hydrogenated. Rather, Tao's teaching is that triglycerides can be used which are *either* partially *or* fully hydrogenated. [See, e.g., Tao, Col. 1, lines 59-60]. Tao does so because he understands that fully hydrogenated materials are more costly, and the only guidance he provides relates, not to soot reduction, but to production of a final candle composition which is a solid at the temperature at which the candle is used. [Tao, Col. 3, lines 3-6].

This express teaching of Tao -- which allows for the use of partially hydrogenated fatty materials -- teaches away from applicant's invention which requires the use of low-IV (substantially fully hydrogenated) materials only. Tao never suggests his candle compositions eliminate soot. Indeed, he *admits* that soot and smoke are still produced, although he states "...soot and smoke formation was subjectively judged to be *lower* when candles including a vegetable lipid-based composition were burned compared to paraffin wax-based candles under the same conditions." [Tao, Col. 5, lines 35-39]. Moreover, Tao does not suggest or disclose how soot can be substantially eliminated, quite simply because he did not appreciate what was required to achieve that end. Applicant, on the other hand, and for the first time, provides a disclosure which enables those skilled in the art to produce paraffin-free candle compositions which are substantially non-sooting, and which, therefore, fully distinguish the Tao reference.

35 USC §102(e) Rejection - Calzada

The Examiner rejected original claims 11, 16-19, and 21 as anticipated by Calzada (U.S. Patent 6,063,144) stating:

Calzada teaches a non-paraffin candle composition comprising plant source stearic acid and hydrogenated vegetable wax (hydrogenated castor oil)(see col. 2, lines 9-28; col. 3, lines 12-15). Calzada desires a stearic acid and vegetable wax that have an iodine number no greater than 7 (see Col. 2, lines 51-53 and col. 3, lines 9-12). Accordingly, Calzada teaching all material limitations of the claims, anticipates the claims.

Applicant believes the new independent claims 22, 32 and 39 fully distinguish the Calzada reference, because each of these claims specifically claims a low IV value for the candle composition as a whole. While Calzada teaches a low-IV for the vegetable derived wax component, Calzada does not make a similar teaching regarding the other components, or address the IV of the candle as a whole. Indeed, Calzada expressly allows for the presence of vegetable oils which "...can contain triglycerides of saturated **and unsaturated** fatty acids. The iodine number of such vegetable oils is preferably in the range of 15 to 150...". [Calzada, Col. 3, lines 18-22]. Calzada neither suggests nor appreciates the relationship between the IV of the candle composition as a whole and the reduction of soot. Accordingly,

applicant respectfully submits that Calzada neither anticipates nor renders obvious applicant's claims which are directed to the specified IV values for the candle composition as a whole.

35 USC §102 Rejection - JP63168494

The Examiner rejected original claims 1-4 as anticipated by JP63168494 stating:

JP teaches a composition of hydrogenated palm stearin having an iodine value of 1-5. JP teaches that these products are suitable for use in preparing candles (see abstract in its entirety). JP teaching all the material limitations of the claims, anticipates the claims.

Foreign patents and published foreign patent applications are "printed publications" and, as such, are restricted in their teachings to what is fairly disclosed. *In re Boe*, 355 F.2d 961 (CCPA 1966). For an invention to be anticipated by a printed publication, the publication itself must enable someone to practice the invention. *Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 651 (Fed. Cir. 1984)(citing *Preemption Devices, Inc. v. Minnesota Mining & Manufacturing Co.*, 732 F.2d 903, 906 (Fed. Cir. 1984)).

The new claims do not include claims having a scope equivalent to that of original claims 1-4; accordingly, this rejection should be obviated. Applicant respectfully submits that new independent claims 22, 32 and 39 fully distinguish JP63168494 because this reference does not disclose controlling the IV of the candle composition as a whole (as opposed to an individual component), whereby substantially no soot is produced when the candle is burned. JP63168494 neither enables nor fairly teaches one having ordinary skill in the art how to produce a candle which produces substantially no soot when the candle is burned (as required by all of the claims at issue here). At best, all JP63168494 teaches is that hydrogenating palm stearin to an Iodine Number of 1-5 provides a product useful for preparing "...candles, matches and wax paper." There is no recognition, or suggestion, by JP63168494 that the hydrogenated stearin would be useful for creating a substantially smoke-free candle, and no teaching or suggestion of how such a candle would be produced. Accordingly, JP63168494 cannot be held to anticipate the independent claims, in which the candle composition as a whole (and not merely one component thereof) has the specified low iodine value. The critical

factor for insuring a substantially soot-free candle is to control the IV of the candle, not just a single component of the candle, and no suggestion of this appears in the cited reference.

Accordingly applicant respectfully submits that there is no anticipation by JP63168494.

35 USC §103 Rejection - JP63168494

The Examiner rejected original claim 5 as obvious over JP63168494 stating:

JP has been discussed above. JP fails to teach that the hydrogenated palm stearin has an iodine number of less than 1. However, a prima facie case of obviousness exists where the claims ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals v. Banner*, 227 USPQ 773 (Fed. Cir. 1985).

As noted above, applicant submits the new independent claims fully distinguish this reference because they specifically claim (1) the claimed IV is directed to the candle and not merely to one of the components thereof; and (2) substantially no soot is produced when a candle of the claimed composition is burned. JP63168494 provides no disclosure whatsoever regarding any specific candle compositions, let alone the construction of a candle intended to eliminate soot production. Where references do not even hint at the problem solved, they have nothing in common with the claimed invention and do not render the invention obvious. *In re Benno*, 768 F.2d 1340 (Fed. Cir. 1985). Accordingly, applicant respectfully submits the pending claims fully distinguish this reference.

35 USC §102 Rejection - Phadoemchit

The Examiner rejected original claims 1-4 as anticipated by Phadoemchit (US 4,843,648) stating:

Phadoemchit teaches candles comprising palm stearin and glyceryl monostearate wherein the composition has an IV of 0 to 5 (see Col. 1, lines 5-11; Col. 2, lines 15-23; Col. 2 lines 64-68; Col. 3, lines 1-32). Accordingly, Phadoemchit teaching all of the material limitation of the claims, anticipates the claims.

The new claims do not include claims having the same scope as original claims 1-4. Accordingly, applicant submits the rejection in view of Phadoemchit is obviated by the new claims presented herein.

Applicant respectfully submits that new claims 22-41 are fully allowable over the cited prior art. Applicant requests allowance at an early date. The Examiner is requested to contact the undersigned in the event any further obstacles to allowance remain which can be resolved by an Examiner's amendment.

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Virginia S. Medlen  
Registration No. 32,050

MEDLEN & CARROLL, LLP  
101 Howard Street, Suite 350  
San Francisco, California 94105  
Telephone: 415-904-6500  
Facsimile: 415-904-6510

*PATENT*  
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**APPENDIX 2**  
**MARKED-UP VERSION OF REWRITTEN, ADDED,**  
**AND/OR CANCELLED TEXT**

- 6 -

A candle made from TG alone will have a bright flame and burn relatively rapidly. A candle made from FFA alone will have a low flame and burn more slowly. By mixing these two products together, a candle can be achieved that has an appealing, steady flame and that burns relatively slowly.

In one embodiment, the mix of FFA to TG for a preferred candle burn is ~~at least about 3~~ at least 2% to ~~about~~ 35% by weight FFA, and most preferably is ~~at least about~~ approximately 4% to ~~about~~ 22% by weight FFA. Most preferably, such FFA is plant source FFA. In another embodiment, the mix of FFA to TG for a preferred candle burn is at least ~~about~~ 40% by weight TG, and most preferably at least ~~about~~ 70% by weight TG. Again, most preferably, such TGs are plant source TGs.

#### Palm Stearine or related TG

Palm stearine (a hydrogenated TG) is preferred because palm stearine is currently a low-cost by-product of palm oil processing and therefore readily available and inexpensive. Furthermore, palm stearine and related plant source TGs are derived from a renewable, non-animal source. These qualities are highly sought after as our society moves towards sustainable resource practices. Also, plant source TGs and FFAs tend to have lower odors.

Candle 10 is preferably made as follows. Palm stearine is available commercially and is usually shipped as flakes. This flaked material can be provided having the lower and more desired IVs of the present invention. In one embodiment, a preferred IV of the TG component is less than 1.0 and more preferably approximately 0.5 or less. The FFA vegetable stearic acid is similarly commercially available, shipped as flakes and is provided having the lower and more desired IVs of the present invention. In one embodiment, a preferred IV for the FFA component is less than 1.0, and more preferably approximately 0.5 or less. These components are preferably melted at temperatures of approximately 180 degrees F and then mixed and poured into a mold about wick 12. The molten wax cools to form the candle body 11. Wick 12 is preferably a paper core cotton wick.